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Environmental Law and Three Economies: Navigating a Sprawling Field of Study, Practice, and Societal Governance in which Everything is Connected to Everything Else

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ENVIRONMENTAL LAW AND THREE ECONOMIES: NAVIGATING A SPRAWLING FIELD OF STUDY, PRACTICE, AND SOCIETAL GOVERNANCE IN WHICH EVERYTHING IS CONNECTED TO EVERYTHING ELSE

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The vast sprawl of the environmental law field makes it a bemusing and confounding puzzle even to those who pursue it as their primary academic vocation. The amorphous breadth and intricate depths of environmental law present special challenges to anyone who tries to navigate the field. This Article addresses several of these challenges, briefly analyzing how environmental curricula are designed, and then suggests a potentially useful new way to conceptualize the realm of environmental law.

A few years ago, after surveying the experiences of more than one hundred of his fellow environmental law teachers, Professor Joseph Sax ruefully concluded:

> Bewilderment and frustration were the most common themes. This subject seems to have overwhelmed us. Virtually every law teacher—however broad his or her overlook—wants to introduce students to the specific materials in the field, and to provide some experience and familiarity with it. Yet, every such attempt is an encounter with statutes of numbing complexity and detail.[1]

The field's problems do not lie just in its cumulation of statutes and regulations. It also sprawls in its range of subject matters, methodologies, and legal structures. It has a base in common law and constitutional law, and extends far beyond public law regulation into the realm of theories of societal governance.

Consider the remarkable range of subject matter covered by the term "environmental law." Its concerns are international as well as domestic, and indeed its scope embraces the planetary and beyond.[2] Its

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1. Joseph L. Sax, *Environmental Law in the Law Schools: What We Teach and How We Feel About It*, 19 Envtl. L. Rep. (Envtl. L. Inst.) 10,251 (1989).

2. Much of the evolving law of outer space in fact sounds in environmental law—the degradation of the ozone layer, issues of radioactive contamination of space, of space junk cluttering the Earth's geosynchronous orbit, and the like, and even the question whether a firm in Georgia should be allowed to launch a mile-wide Mylar billboard into earth orbit to

subjects include a menagerie of issues—from nuclear waste management, auto exhaust hydrocarbons, national parks and wilderness, leukemia from contaminated public wellwater, and suburban growth rolling over rich agricultural lands, to the link between water pollution and the fish-killing bacteria *Pfisteria piscicida*, historic battlefields, indigenous tribes losing their homelands, seal puppies or endangered spotted owls, siting battles over toxic waste disposal facilities, children in urban slums exposed to rat bites and lead poisoning, and many more. In the environmental field, as the First Law of Ecology holds, everything is connected to everything else.[3]

The field's methodologies cover a similarly broad spectrum of possible approaches. They range from the philosophical imperatives of intuitive ethicists to the pragmatics of legal realists and the law-and-economics faith of the Chicago School. The field's legal terrain likewise ranges broadly, from common law, constitutional issues, the subtle vagaries of multilayer statutory accretions and administrative quagmires to international and comparative law and contending theories of societal governance. It supports professional careers within and outside traditional legal practice, working with industrial and business clients and governmental units at every level, large firms and small, citizen organizations, neighborhoods and individuals. Ultimately, the field of environmental law is so amorphously vast that it is not clear why we even regard it as one field.

This Essay addresses four of the challenges facing academics in this field, two of which are logistical and two conceptual. The two logistical challenges briefly addressed here are endemic in teaching environmental law—choosing *what to teach* and deciding *how to teach it*. Today some rough generalizations on strategies for curricular coping can be made, emerging from the evolution of environmental law courses at many American law schools over the past twenty-five years.

The conceptual challenges may be even more difficult to tackle, and are addressed here at greater length: first, *how to frame and define this sprawling field*, and then, *how to understand environmental law's real life political dynamics*—its practical realities and its unique role in societal governance. This Essay proposes a new way to address these conceptual challenges, the construct of "three economies," splitting the realm in which environmental law and economics operate into three

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be visible like a commercial moon to billions of earthbound potential consumers. *See generally* Daria Diaz, *Trashing the Final Frontier: An Examination of Space Debris from a Legal Perspective*, 6 TUL. ENVTL. L.J. 369 (1993); Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Oct. 10, 1967, 18 U.S.T. 2410; John Kroll, *Company Markets Orbital Advertising Space*, CLEVELAND PLAIN DEALER, Apr. 13, 1993, at 1c.

3. As the pioneering environmentalist John Muir said, "When we try to pick out anything by itself, we find it hitched to everything else in the universe." JOHN MUIR, MY FIRST SUMMER IN THE SIERRA 211 (1911).

overlapping spheres. This model seeks to analyze the functional civic role of environmental law, the inherent political tensions and contending forces that shape environmental law in daily practice, and, perhaps, how we are to conceptualize civic governance in the new millenium.

I. SOME CURRICULAR LOGISTICAL CHALLENGES

A. What to Teach?

Surveying the past thirty years of environmental law in the law schools—since 1970 when the first Earth Day galvanized a cadre of attorneys, law teachers, law students, and citizens to begin integrating the lessons of environmental awareness into the legal system—several levels of pragmatic compromise have evolved in bringing the field into the law school curriculum.

At the minimum level, virtually all law schools now appear to teach at least a basic survey course in environmental law, to which most add a basic land use course.[4] The majority of schools go beyond this minimal model, adding one or more specialized courses. A very few schools ambitiously try to extend their curricula to include courses incorporating the full range of variegated subjects in the field.

Under any of these models, designing a satisfactory basic environmental survey course is a frustrating task. Inevitably, the basic course has to be a survey. It must take account of constitutional and common law features of modern environmental law and a glimpse of natural resources law, as well as exploring the complex regulatory systems that are usually the heart of the course. Most teachers feel a need to introduce the "Big Five" federal statutes in at least some detail. (The exact choice of a "Big Five" varies somewhat from professor to professor, but typically includes: the Clean Water Act ("CWA"); the Clean Air Act ("CAA"); the National Environmental Policy Act ("NEPA"); Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"); and then another of the teacher's choosing, often the Resource Conservation and Recovery Act ("RCRA") or the Federal Insecticide Fungicide and Rodenticide Act ("FIFRA")). Collecting even brief explorations of each of these components into one semester course already is close to an impossible task. To this lineup most of us feel obliged to provide our students with at least one "deep dive" (as Professor Lazarus has called it)[5]

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4. There are 168 schools that appear in the cumulative listing of professors teaching environmental law, and 111 in land use law. *See* WESTGROUP, DIRECTORY OF LAW TEACHERS 1114–18, 1173–75 (1998-99). Land use law is closely tied into the environmental curriculum because it echoes so many of the themes and techniques of environmental law generally.

5. During the symposium presentations, Prof. Lazarus described several possible

into the technicalities of one of the areas of inquiry. This might involve modelling a RCRA hazardous substance listing, working through a Superfund cleanup with negotiations and settlement controversies, or the like.

None of the possible compromises avoids unfortunate tradeoffs. Given the inescapable triage choices in statutory coverage, inevitably some students feel dissatisfied because they are not taught more of the two or three dozen other federal and state statutes that play significant roles in the field.

For some, a compromise approach has been to impose a legal process analysis on the basic survey course instead of focusing on only one or two pollution statutes as paradigms for the whole field.[6] By studying a series of environmental law cases and structures throughout the legal system as an opportunity to analyze the different types of "taxonomies" they represent, students are encouraged to develop the skill of extrapolating, analogizing, and transposing their understanding of particular statutory mechanisms onto other statutes that have similar characteristics. By analyzing the different statutory regimes, students can undertake regulatory design inquiries: What kinds of legal mechanisms are created in each case to apply standards? What different kinds of standard-setting procedures are implemented by the statutes? What kinds of structural legal mechanisms are used in each case to apply the standards? What different kinds of characteristic results and implications follow from the different statutory design choices?

Given the evident shortcomings of the broad-smattering survey course, many schools apparently perceive a need to offer at least one course beyond the base. There is a useful curriculum analogy to tax law here. For the same reason that most schools have a tax curriculum with more offerings than the one basic course in income taxation, law students who want to be prepared to begin a professional life in environmental practice require far more than the basic survey.[7] A basic environmental survey course can give students some sense of the range of mechanisms involved and an introduction to the extensive esoteric terminology of the field, but not a deep sense of what lawyers really have to do in modern environmental practice. To answer this need, many schools offer a specialized elective course in at least one of the Big Five pollution statutes, providing concentrated opportunities to take more substantial deep dives

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"deep dives" into specific regulations, designed to give students a sense of the technical depth as well as the breadth of the field.

6. Responses to the challenges of the field have been built on this Saxian approach. *See generally* ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY (2d ed., 1998).

7. Environmental law is now technically more voluminous than tax law. The Internal Revenue Code and its regulations add up to something on the order of 6000 pages. The cumulative statute and regulatory pages for just three of the major federal regulatory statutes—the CWA, the CAA, and the RCRA—total more than 11,546 pages.

into one of these regulatory systems.[8] Without such advanced elective courses, many students typically would never find an opportunity to work with the Code of Federal Regulations, an essential element of modern administrative practice. The specialized courses also allow students to dig far more deeply into the complex relationships between the legal provisions and the science and economics of the specialty areas covered in the course.

Only a few schools appear to have attempted the ambitious task of extending their curricula to cover all or nearly all the major subject areas that exist within the environmental law field. These schools offer more than fifteen or twenty elective courses, and often support masters-level programs in the field. Again, the tax analogy is relevant. Not all attorneys who practice in the area need the equivalent of specialized degrees, but it is useful that such programs exist for those who want to shape their training with laser-like focus.

B. How to Teach It?

How does one cope, especially in the survey course, with the coverage problems imposed by the breadth of the field ("If this is Tuesday, this must be RCRA . . . .") and the technical depth of the material ("If industrial waste is hazardous, one must first determine whether it meets one of the toxicity, corrosivity, ignitability, or reactivity parameters of Subtitle C; if it does not fit one of these parameters yet still is physically hazardous, what compensatory controls are to be given under Subtitle D to limit potentially-harmful public exposures?")?

To avoid the "numbing" learning and teaching experiences chronicled by Professor Sax, teachers try to build several instructive, engaging slices into the mechanics and dynamics of environmental law practice as part of their courses. Thus environmental law classes often have pioneered the academic simulation approach in their law schools, or presented guided reading puzzles for student problem solving, drafting exercises, role playing, or linear tracking of complex and engaging case studies like the vivid story of toxic contamination and leukemia in Woburn, Massachusetts, chronicled in the book and movie *A Civil Action*.[9]

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8. "As teachers in a professional school, our course offerings are inevitably driven to some extent by the issues that engage contemporary practice . . . . [Environmental teachers in particular face] the bewildering question of how shall we help our students prepare for the world of their mature years." Sax, *supra* note 1, at 10,253.

9. *See* JONATHAN HARR, A CIVIL ACTION (1995). As the *New York Times* recently noted, dozens if not hundreds of classes in environmental law and policy around the country have picked up on the *Civil Action* narrative to engage students in an analytical inquiry into the law, science, and process of such complex conflicts. *See* William Glaberson, *Best-Seller Account of a Lawsuit Spurs Law School Change*, N.Y. TIMES, Dec. 26, 1998, at A1. There is, in fact, a minor ongoing controversy about this use of *A Civil Action*. The *Wall*

Many schools, pushed by their students, have launched active environmental law societies and environmental law clinics.

Although most teachers seek to prepare their students for the difficult problem-solving that they will be called on to do, an environmental law course should be more than a practical education. The field invites an exploration of a range of fascinating theoretical problems, such as the variety of conceptual bases for designing different modes of environmental regimes (e.g., the ongoing debates between command-and-control traditions and market-based techniques). Ultimately, environmental law offers uniquely penetrating perspectives on societal governance.[10]

II. A Conceptual Challenge: Defining and Framing the Field of Environmental Law within Three Economies

What do such vastly dissimilar subject matter areas and legal issues have in common that allows them all to be included within what is allegedly one single field, "environmental" law? If a workable definition of such a common thread can be found, how do we visualize the field so as to make sense of it as more than an agglomeration of its various constituent parts?

A. Environmental Law and the Marketplace

What the diverse issue areas and inquiries of environmental law have in common—from wildlife to industrial pollution, from genetically engineered pesticides to historic preservation conflicts, and beyond—is that virtually all of them are about the near and far consequences of human actions. The marketplace of human enterprise is the prime generator, not only of the unprecedented wealth, power, and technological achieve-

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Street Journal editorially criticized the use of the book, and this writer's advice to "engage students actively," as a soft-headed dilution of the process of learning the law. Editorial, *Uncivil Action*, Wall St. J., Jan. 11, 1999, at A22. In rejoinder, the author would note that the *Wall Street Journal* should applaud this trend. Most professors do not in fact teach *A Civil Action* as an uncritical paean of praise for the plaintiff's attorney, the "Porsche-driving, mustachioed Mr. Schlictmann," but rather as a challenging, multi-level analytical puzzle. Many professors attempt to teach their students complex technical hands-on problem-solving skills, as distinct from the passive lecture model of law classes or the artificial games of wit of *The Paper Chase*. *See* John J. Osborn, The Paper Chase (1971).

10. While the tax law curriculum may provide a useful analogy for comparisons with environmental law because of its similar struggle with a highly complex set of regulations which govern the field, it falls behind environmental law when one shifts to the field's conceptual role in society. Unlike tax law, environmental law is more than a mechanism for functional implementation of legislative policies. Environmental law embodies a civic-societal philosophy as well as the doctrines and mechanics of a system of behavioral regulation.

ments in modern society, but also of virtually all problems we call "environmental."

Part of the reason why human enterprises cause environmental dysfunction comes from the chronic uncertainty and ignorance about causes and consequences that so often characterize environmental issues. One can never know all of the attenuated consequences that follow from a particular technological action. Environmental law has identified many of these deeply problematic consequences, but thousands of others are currently completely unknown and may remain so. Who would have guessed, for instance, that when industry turned to chlorinated hydrocarbons for a wide range of manufacturing applications that they would ultimately cause substantial problems ranging from "smoke inhalation poisoning" when PVC pipes and wiring burn to produce a vapor resembling mustard gas, to the sexual problems of alligators in Lake Apopka in Florida?[11]

Even where potential consequences are known, the logic of cost-externalization drives human enterprises to pass on potential and actual social costs into the commons of society and the environment. As rational choice theorists have observed, virtually all human behavior is motivated by the logic of individualized cost-benefit analysis. Humans tend to make decisions on relatively short-term horizons, and in insulated self-referential terms. We strenuously avoid and ignore burdensome liabilities if we can, hoping or pretending that negative consequences will disappear. When we are involved in a production activity, we resolutely display an inclination to pass wide the costs, while holding close the benefits and profits. Thus there is a universal tendency of individuals and associations toward cost externalization.

The "bottom line"—measured in money, power, security, pleasures, and satisfactions—drives virtually all corporate and individual actions, and the political-economic marketplace that emerges from this phenomenon is an accumulation of a myriad of individual "bottom lines," a powerful system built upon each component's profit-maximizing drive. The networked accumulation of a myriad of individual units seeking to maximize their bottom lines creates what we have come to call "the marketplace," a politically and economically powerful system of human systems built upon all its components' profit-maximizing drives.[12]

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11. *See* THEO COLBORN ET AL., OUR STOLEN FUTURE: ARE WE THREATENING OUR FERTILITY, INTELLIGENCE, AND SURVIVAL?—A SCIENTIFIC DETECTIVE STORY 170 (1996). In many areas of the country, including Florida, the sexual orientation of wildlife, and its reproductive organs, appear to be affected by cumulated chlorinated hydrocarbons acting as estrogen mimics and endocrine disruptors. This raises truly disturbing portents for human endocrine systems and child development. *See id.* at 6, 150–53, 168, 171–97.

12. The use of the term "marketplace" is intended to describe not only the interrelated transactional systems of private corporations and individuals, but also the structures of governmental agencies that, intertwined together with the private enterprise process, have come to constitute so much of the societal governance process.

"The marketplace," it can be argued, is the single most dominant structure of human organization today, far more pervasive than government systems. It has induced astonishing technological accomplishments and, for many, it has brought about the highest standard of living in human history. Manifested in millions of transactions of daily life within and between corporations, governmental players, and individuals, the structure and processes of the marketplace powerfully drive the choices of what will and will not be done by all participants.

The marketplace, however, deals almost exclusively with things that have a market price or value, things that can be bought and sold. It inherently ignores many public and private values that are not directly relevant to maximization of its individual participants' political and economic profits. This tendency to focus on profit and to ignore concerns that are not readily quantifiable in dollar terms feeds back into the logic of maximizing the bottom line while passing on costs whenever possible. Moreover, efforts to force civic values and accountability on the marketplace, whether by government action or private effort, encounter resistance. The marketplace mobilizes great political force to maintain its momentum, and can often induce governments to adopt short-term, narrowed market-based frames of reference. If a universal behavioral tendency toward cost externalization is the base cause of the majority of environmental problems, defining an appropriate balance between the marketplace and the role of government is the abiding riddle in resolving them.

What then is the role of environmental law? Given the pervasive logic of individual cost externalization, and marketplace resistance to diffuse civic concerns, environmental law attempts to provide a societal accounting of many of the major societal problems externalized by the marketplace. Its mandate is to chart a societal course toward more sustainable modes of production, consumption, and quality of life. This unfortunately means that environmental law often finds itself in tension with the marketplace.

B. The Three Economies

The construct of three economies aids in defining the societal role of environmental law. There are many different thematic constructs used to organize the presentation of environmental law analysis: the uncertainty and scientific complexity associated with pollution regulation, Rachel Carson's theory of interconnectedness,[13] an administrative law focus, cost-benefit-risk analysis, other overarching law-and-economics ap-

13. *See generally* RACHEL CARSON, SILENT SPRING (Houghton Mifflin Co. 1987) (1962).

proaches, juxtapositions between crusading moral outrage and cool-headed analysis, environmental justice, and more.

Since economics has become such a dominant structure for understanding and shaping human behavior, it seems appropriate to define the role and function of this field of governance in structural economic terms. Building on Professor Sax's lead, with help from the Law and Society and Civil-Society initiatives, one can formulate yet another approach: environmental law should be viewed as operating in the context of *three* economies, not just one.[14]

Professor Sax proposed that environmental law be viewed through two economies. Mulling over Justice Scalia's opinion in *Lucas v. South Carolina Coastal Council*,[15] he criticized the Justice's premise that environmental law regulations that overrode private property rights had to be justifiable solely in market terms recognized at common law. In short, Scalia's opinion required that regulations prohibiting development in the barrier beach erosion zone be justified in market-based terms, either as a function of common law titles to property or of tort protections of the property rights of others.[16] Sax argued that the focus on the marketplace economy in defining legal rights missed an important reality: that environmental regulations operate within and are designed to protect a different economy as well—namely, the "economy of nature." The South Carolina coastal regulation in *Lucas* attempted to protect barrier beaches that fluctuated with natural cycles, with their constituent natural systems, wildlife, and other components of the economy of nature. On the other hand, the marketplace economy as reflected in *Lucas* "considers such functions expendable. Indeed, getting rid of the natural, or at least domesticating it, was a primary task of the European settlers from North America. An ecological view of property, the economy of nature, is fundamentally different . . . ."[17]

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14. This analysis builds on a sketch of the constructs set out in the introductory chapter of our recent casebook, and echoed in a subsequent *festschrift* for Professor Sax. *See* PLATER ET AL., *supra* note 6, at 56–59; Zygmunt J.B. Plater, *The Three Economies: An Essay in Honor of Joseph Sax*, 25 ECOLOGY L.Q. 411, 429–37 (1998).

15. 505 U.S. 1003 (1992).

16. In *Lucas*, Justice Scalia wrote that regulations depriving land of all "economic benefit" constitutionally require compensation unless the restrictions are ones "that background principles of the State's law of property and nuisance already place upon land ownership." *Id.* at 1029. The marketplace thus implicitly incorporates an expectation of tort and property law restrictions on real estate as natural and legitimate. In contrast, governmental regulations under the police power are deemed artificial and hence constitutionally suspect.

17. Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding Lucas v. South Carolina Coastal Council*, 45 STAN. L. REV. 1433, 1442 (1993). Sax there refers to "the transformative economy" for what here will be labeled "the marketplace economy." Private property rights are primarily defined with reference to the daily reality of marketplace ownership, and it has been these property rights that drive what has become the greatest economy in the history of the world.

Why use the word "economy"? The concept of a natural "economy" functionally

This formulation of a second economy, the "economy of nature," however, is insufficient to capture the full realm of environmental law. Moreover, the concept of an economy of nature does not automatically persuade and enlist those who hold market-dominated views of the legal system. Market-oriented players generally perceive no compelling reason to acknowledge the role of environmental law in protecting the "economy of nature" other than altruism. Limiting the model to "two economies" also misses a further important sector of societal concern, the realm of those *human* concerns that, like the economy of nature, are externalized from and lie outside the marketplace economy.

Thus, in both political and logical terms there must be a third conceptual economy, the "civic-societal economy."[18] "Sustainability," the current dominant formulation for defining the fundamental objectives of global environmental law and policy,[19] is a concept that necessarily in-

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echoes Aldo Leopold's lyrical descriptions of how an ecosystem works and evolves:

> Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil. The circuit is not closed; some energy is dissipated in decay, some is added by absorption from the air, some is stored in soils, peats, and long-lived forests; but it is a sustained circuit, like a slowly augmented revolving fund of life . . . .
> The velocity and character of the upward flow of energy depend on the complex structure of the plant and animal community, much as the upward flow of sap in a tree depends on its complex cellular organization. Without this complexity, normal circulation would presumably not occur. Structure means the characteristic numbers, as well as the characteristic kinds and functions, of the component species. This interdependence between the complex structure of the land and its smooth functioning as an energy unit is one of its basic attributes.
> When a change occurs in one part of the circuit, many other parts must adjust themselves to it. Change does not necessarily obstruct or divert the flow of energy; evolution is a long series of self-induced changes, the net result of which has been to elaborate the flow mechanism and to lengthen the circuit.

ALDO LEOPOLD, A SAND COUNTY ALMANAC, WITH ESSAYS ON CONSERVATION FROM ROUND RIVER 253–54 (Oxford Univ. Press 1966) (1948).

In today's terms, an "economy" is probably the most appropriate concept to indicate that natural ecosystems are equally intricate and decisive self-contained systems for managing inputs and outputs, adaptations and changes, of their constituent elements. Garrett Hardin once argued, however, that economics should be a component of, and subordinated to, the greater sphere of ecology, rather than vice versa. *See* GARRETT HARDIN, EXPLORING NEW ETHICS FOR SURVIVAL: THE VOYAGE OF THE SPACESHIP *BEAGLE* 73 (1972).

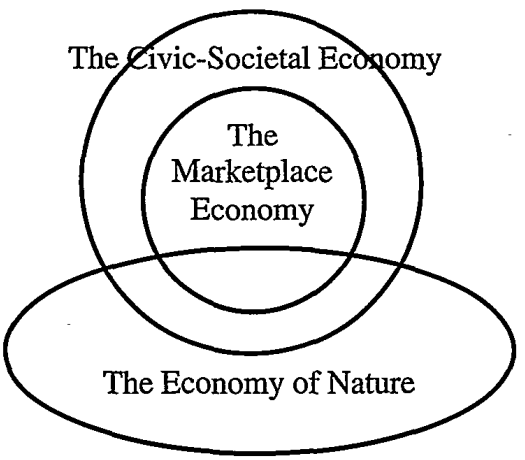
18. As with the "marketplace" economy, the semantic labels of these three concepts can be varied. It is possible to label the third economy as the "public" economy, but this rubric already has a different connotation to economists. Just saying "civic" economy implies too little, while "societal" economy is too amorphous. So for the time being it remains here unmelodiously as the "civic-societal" economy.

19. The concept of "Sustainable Development" was launched by the 1987 "Brundtland Commission Report." *See* THE WORLD COMM'N ON ENV'T AND DEV., OUR COMMON FUTURE 43–65 (1987). This concept then became Principle One of the Rio Declaration that emerged from the unprecedented 1992 conclave of 140 heads of state and prime ministers at Rio de Janeiro addressing global environmental issues. *See* U.N. Con-

cludes human concerns as well as natural ecological realities. The basic societal and governmental objective of "sustainable development" is thus built upon three economies, not just one economy or two.

Here are three economies, with the following schematic diagram suggesting the three realms in which environmental law operates:

THE THREE ECONOMIES



The relative size of the three economies in proportion to one another depends very much upon the observer's personal perspective).[20]

The "marketplace economy" is the familiar, dynamic economy that dominates the daily life of individuals and nations and forms the system that most people refer to when they talk about "economics" and short-term "economic necessities." The social welfare economics often noted in academic discussions of "economics" are not included. The marketplace economy is comprised of both private and public participants, linked in a structure of interwoven interests. Its economics and political

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ference on Env't and Dev., U.N. Doc. A/CONF/151/5, 31 I.L.M. 874 (1992) [hereinafter Rio UNCED]; *see also* Programme for the Further Implementation of Agenda 21, U.N. GAOR, 19th Special Sess., Annex, U.N. Doc. A/S-19/29 (1997). *See generally* Symposium, *The Role of Law in Defining Sustainable Development*, 3 WIDENER L. SYMPOSIUM J. 1–522 (Fall 1998).

20. To many marketplace economists, the marketplace economy incorporates virtually everything worth considering. Concerns lying outside the structure of the daily marketplace are marginal and hard to conceive. To some biologists, the economy of nature may be the dominant economy in terms of size and complexity, likely to survive in some form longer than the human players defining the marketplace and civic-societal economies. To persons who are in a position to be concerned with the long-term prospering and survival of human societies, the perspective of the civic-societal economy, by definition extending beyond this or next fiscal year, ultimately dwarfs the private marketplace mechanisms which dominate the economic perspective of most people.

power, however, are shaped by its myriad transactions and its participants' fractionalized interests, so that it tends to avoid consideration of broader impacts upon the natural world and public interests, which therefore are only coincidentally integrated within it.

The "economy of nature," as Professor Sax discerned it, is a separate system, supplying the context and the vast majority of resources for human society and the marketplace economy, as well as absorbing many of its chronic externalizations. The vast, extended ecosystems of living organisms in their physical settings, the geophysics of the carbon cycle, the water cycle, solar energy absorption, and global weather patterns, all interact within the economy of nature. Typically, however, they are integrated into the marketplace economy only as commodities.

The "civic-societal economy" denotes the realm of human societal concerns that exist beyond the logic and considerations of the marketplace economy. The civic-societal economy encompasses the public, societal values, ethics, benefits and losses that cumulatively shape the full and long-term interests of society. If endemic chemical exposures, for example, cause illnesses that cannot be traced back to accountable sources in the marketplace economy, these public costs will largely remain in the civic-societal realm. The full economics of such systemic problems largely will be ignored by marketplace players focusing on their individual bottom lines.

Analytically splitting out the latter two economies provides a tool for forcing a conceptual analysis of the realities they represent in modern environmental law, which otherwise may be eclipsed and neglected within the marketplace economy's dominance of modern governance. Sound economic analysis and law must be extended at least to include the latter two realms' impacts on humans and our society.[21]

Once the cost externalizations of the marketplace economy pass into the natural and the civic-societal economies, their harms aggregate and are only with difficulty dragged back into the marketplace economy for an accounting. When industrial pollution is discharged into the natural economy, some of it may ultimately accumulate there, but most of these externalities also pass on into the civic-societal economy, because disruptions of the natural economy often reverberate in dysfunctional consequences to humans. Chlorinated hydrocarbons in the environment may harm not only fish, birds, and alligators, but also the reproductive, behavioral, and cognitive development systems of humans who breathe the air, drink the water, and are a part of the same food chains.[22] As far as the

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21. Environmental law is often concerned with natural systems, but usually it is most directly concerned with protection of human welfare. Even concerns about purely "natural" things are generally filtered through the consideration humans hold for them.

22. *See* COLBORN ET AL., *supra* note 11 at 166–96 (indicating effects on human sperm counts, fetal development, intelligence quotient, and neurological conditions, as well as cancer).

marketplace economy is concerned, however, these consequences are invisible or academic. Because the causation chains are attenuated or imperceptible, these harms occur in a realm of non-attributability, non-accountability, and non-liability.

All the individual bottom lines that constitute the marketplace economy do not inherently add up to a positive bottom line for society as a whole. To the contrary, the public interest eventually will have to cope with far more of these substantial negatives than the private actors within the marketplace economy who see and enjoy only their short-term gains. The marketplace economy is probably the most intricate and sophisticated mechanism ever devised to manage the extraordinary complexity of human society. Yet because the marketplace economy deals almost exclusively with goods and services which can be given market values for short-term private transactions, it systemically resists acknowledgment of many important elements of reality, both natural and human.

The three economies model demonstrates that environmental law inhabits a space that exceeds the interstices of the marketplace. In the economy of nature it seeks a fuller accounting of externalities, and in the civic-societal economy it seeks to protect public values and resources in the long-term. The concerns of environmental law within all three economies are institutionalized through statutory and regulatory systems, as well as constitutional and common law doctrines including the public trust doctrine. Most often, environmental regulations are designed to protect the human interests represented within the civic-societal economy.[23] International environmental law's Precautionary Principle, however, warns us that failure to remedy disruptions of natural systems often pose threats of serious human and civic consequences.[24] Environmental law is perhaps the best example in modern legal systems where calculations of the *future* needs of human society are incorporated into the process of setting present-day operative norms.

The broader scope of environmental law envisioned by the three economies provides a fuller picture of its role in society than many other characterizations do. In the conception of many market players, environmental law often is viewed merely as an annoying concession, an array of required Band-Aids or gadfly-induced palliatives, targeted opportunisti-

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23. Even where environmental law seems to focus on the protection of a natural system purely for the sake of that natural system—as in the protection of an endangered species where there is no known or likely utilitarian benefit to human society from that protection—in most cases pragmatic political advocacy of such natural protections must seek and emphasize linkages to human welfare. *See* Zygmunt Plater, *The Embattled Social Utilities of the Endangered Species Act*, 27 ENVTL. L. 845, 852–53 (1997).

24. *See generally* DAVID FREESTONE & ELLEN HAY, THE PRECAUTIONARY PRINCIPLE & INTERNATIONAL LAW: THE CHALLENGE OF IMPLEMENTATION (1996); *see also* EDWARD TENNER, WHY THINGS BITE BACK: TECHNOLOGY AND THE REVENGE OF UNINTENDED CONSEQUENCES (1996) (showing continual replays of the Law of Unintended Consequences in the effects of technology upon natural systems).

cally throughout the structures of the marketplace to blunt the sharp edges of entrepreneurial activities—in each case a profitless tradeoff against economic returns. In the less jaundiced view of others, the role of environmental law is conceived of as a "partnering" with the marketplace, with the bottom-line logic of the economic system shaping the ultimate standards and implementation of regulatory constraints.[25] Often environmental protection principles have been perceived as afterthought overlays upon decisions made in the traditional processes of the marketplace.

These narrower conceptions tend both to obscure the fact that government and markets have different roles and to marginalize the significant societal role that this field plays in modern industrial democracies. Yet, in the post-Rio era, environmental law cannot be relegated to the status of a mere afterthought.[26] As early as the 1960s, Rachel Carson demonstrated that the tendency to externalize costs through short-term individualized thinking can be quite dysfunctional in overall societal terms. A modern legal system coping with societal realities must take account of the cumulative negative effects of human enterprise as well as its positive economic consequences.[27] Building on Rachel Carson's guiding perceptions, environmental law has become a way to address marketplace externalization and to counteract the blurring of roles between government and the marketplace.

Beginning in 1970, a parade of several dozen major federal statutes, often echoed by state corollaries, marched into the law books.[28] With the help of citizen enforcement in the courts, these statutes created a serious mandatory structure of protections against the environmental excesses of marketplace players. Viewed through the schematic diagram of the three economies, the locus of most environmental law regulations lies within the rings surrounding the marketplace economy, in directly protecting the

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25. This would include the wistful theories of "free market environmentalism," and much of the law and economics literature seeking to define an acceptable marketplace role for environmental law. *See generally* TERRY L. ANDERSON & DONALD R. LEAL, FREE MARKET ENVIRONMENTALISM (1991).

26. *See generally* Rio UNCED, supra note 19.

27. *See* CARSON, *supra* note 13, at 187–98.

28. In the early 1970s, Congress passed an unprecedented volume of statutes—the National Environmental Policy Act of 1969, the Clean Air Amendments of 1970, the Occupational Safety and Health Act of 1970, the Fish and Wildlife Coordination Act, the Noise Control Act of 1972, the Clean Water Act of 1972, the Natural and Scenic Rivers Act, the Coastal Zone Management Act, and at least two dozen more. There were more than 30 significant environmental statutes passed in the three years after the National Environmental Policy Act. *See* ZYGMUNT J.B. PLATER ET AL., NATURE, LAW, & SOCIETY TEACHER'S MANUAL 358–60 (1992) (historical statutory appendix). In terms of legislative volume, only President Carter's years come close, with 20 legislative acts in an equivalent span, many of which merely amended and fine-tuned prior acts. These modern statutory systems reflected Rachel Carson's teachings, addressing ecological and economic values and problems that had not been adequately acknowledged or accounted for in previous public and private law.

economy of nature (as in the Endangered Species Act, the Wilderness Act, Marine Sanctuaries, and NEPA), or in protecting the civic-societal economy (as in the pollution statutes and other laws that focus on health effects, such as OSHA and RCRA).[29] The natural and civic-societal economies also contain the public trust doctrine (with its principles of intergenerational equity, legacy, and cultural values), as well as other constitutional theories of environmental protection. In some cases, the common law also operates in these two economies, as when public nuisance actions try to assert public values over marketplace externalizations, or other tort theories are used in defense of public interests beyond market accountings.

The "economic" values protected by environmental law in the economy of nature and the civic-societal economy are neither marginal nor incidental. The costs of environmental illness to humans are astronomic, but these costs are at best only partially reflected in the marketplace economy. Costs externalized into the economy of nature are often completely intangible in economic terms.[30] In the past several years, however, a number of resource economists have developed projects to quantify a dollar value for resources and "ecological services" that the economy of nature provides the traditional marketplace economy. These "natural capital" accounting projects have adduced astonishing sums for the annual value of natural inputs into human society. Though these inputs are largely taken for granted as free goods, costing only the expense of resource capture, these resource economics accounting projects have estimated their annual value (most of which lies completely outside market accounting) in the range of U.S. $16-54 trillion per year.[31] A number of economic theorists now say that realistic measures of economic performance must take account of environmental and human life quality effects,

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29. Environmental law sometimes focuses on marketplace externalities purely in terms of the economy of nature itself, where there are few or no material consequences upon human welfare—as in those cases of endangered species protection where no substantial human utility is served, in humane treatment cases, in ecological preservation for moral, religious, aesthetic, or intellectual purposes, and the like.

More often, environmental law is directed against marketplace externalities that directly impact human welfare in the civic-societal economy—as in human toxic exposures, urban transit, and historic preservation—without reference to the economy of nature, or where marketplace externalities impinge upon natural systems so as to cause consequential harms to human welfare in the civic, societal economy—as with global warming, Forest Service clearcutting sales, and toxic discharges into the nation's waters.

30. For example, it would be difficult if not impossible to quantify the cost of a particular species' extinction.

31. The Gross Natural Product ("GNP") of the entire planet today is around U.S. $18 trillion per year. *See* Robert Costanza, et al., *The Value of the World's Ecosystem Services and Natural Capital,* NATURE, May 1997, at 253; *see also* Robert Putnam, *Bowling Alone, America's Declining Social Capital,* 6 J. DEMOCRACY 66, 66–67 (1995) (arguing that "social capital," one of the nations most important assets, is threatened by the deterioration of civic engagement between people and communities, given the stresses of life in the modern marketplace economy).

and propose the adoption of a Net National Product accounting instead of the traditional Gross National Product.[32] A society ignores such costs at its peril.

III. A Conceptual Challenge: Analyzing the Political Dynamics of Environmental Law

> We have more and more "environmental artillery": more lawyers working on problems that seem increasingly sophisticated, with ever greater economic stakes, and at the same time ever greater attenuation from the ultimate causes and concerns that gave rise to the field.[33]

What might the "three economies" construct, as proposed in this sketch, add to the teaching and academic inquiries of today's environmental law? Beyond defining the structural role of environmental law as representing cumulative long-term needs and values too often ignored in the political process and the marketplace, the three economies offer a context for analyzing the dynamics of environmental law in practice and in national politics. The contending forces and tendencies within the practice and politics of environmental law cannot be understood in disjointed individual terms. As one considers all of the rules and structures of particular statutes, or common law theories of tort liability in environmental settings, the details can be so voluminous that they mask the larger tendencies and contending forces within the structure. The three economies framework offers a way to see and to examine the broader trends at work when studying environmental law at the micro-level.

The day-to-day reality of environmental practice in legislatures, agencies, and courts reflects not only issues of scientific fact-finding and

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32. *See generally* Paul Hawken, The Ecology of Commerce: How Business Can Save the Planet (1993) (providing a base analysis of what is wrong with traditional measures of economic health). Gross Domestic Product ("GDP") has for various rhetorical reasons generally replaced GNP, but GDP likewise resolutely ignores cumulative negative considerations. Many theorists have been arguing that measurements of national welfare must take more realistic account of socially experienced quality of life. *See also* Marc Breslow, *Is the U.S. Making Progress? Unlike GDP, a New Measure Says "No"*, Dollars and Sense, Mar./Apr. 1996 (reporting on the Redefining Progress group's substitution of the Genuine Progress Indicator for the usual GDP measures, which arrived at more conservative views of national economic health). *See generally* Amartya Sen, On Economic Inequality (1997) (contrasting and evaluating various measures of inequality); Clifford Cobb et al., *If the GDP Is Up, Why Is America Down?*, Atlantic Monthly, Oct. 1995, at 59 (addressing, "Why we need new measures of progress, why we do not have them, and how they would change the social and political landscape").

33. *See* Sax, *supra* note 1, at 10,252 (quoting a letter from Prof. David Getches of the University of Colorado).

doctrinal legal analysis, but also a dominating tension among the three economies. Industry lobbyists on environmental law issues typically cast their arguments in terms of the public interest even though their driving agenda is marketplace self-interest. They emphasize setting "reasonable" degrees of public protections by balancing protection with public prosperity, jobs, and economic security.

The marketplace's inherent resistance to the assertion of public values may be a well-known fact, but it often goes discreetly unacknowledged. One can not understand the realities of modern environmental law, however, without understanding the pervasive, coordinated, day-to-day pressures that shape legislative bills and agency programs in intricate detail. The dramatic story of the 104th Congress is a vivid example of this political-economic landscape. In the first session of the "Contract With America" Congress, the marketplace asserted its dominance in environmental law through a raw avalanche of power, with industrial lobbyists writing and passing a series of House bills rolling back federal environmental laws.[34] The lobbying structures of the marketplace powerfully shape legislative bills, regulation and enforcement, media coverage, scientific disclosure, and judicial perceptions.[35] Marketplace resistance is such a logically inevitable and systemically pervasive phenomenon that any environmental law analysis that ignores it is naïve.

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34. *See* Zygmunt J.B. Plater, *Environmental Law as a Mirror of the Future: Civic Values Confronting Market Force Dynamics in a Time of Counter-Revolution*, 23 B.C. ENVTL. AFF. L. REV. 733, 734–35, 742–62 (1996).

35. The political power of the marketplace operates on the broadest scale—from legislative and administrative lobbying and the "capture" phenomenon to public relations campaigns. For instance, the "Foundation for Research on Economics and the Environment" ("FREE"), receives support from manufacturing and resource-depletion industries and industry-oriented foundations, and offers free getaways for judges as well as professors, journalists, and others thought to shape public policy. In 1997 alone, FREE says, "*eight percent of the entire federal judiciary* attended one of our four seminars", and to date, 40% of the judiciary has attended one of FREE's week-long, all-expenses-paid holidays in Montana where they learned about the excessive protections given endangered species, and the necessity of compensating private corporations for restrictions protecting public environmental values. *See* Ruth Marcus, *Issues Groups Fund Seminars for Judges*, WASH. POST, Apr. 9, 1998, at A1. *See generally* ANDERSON & LEAL, *supra* note 19.

Marketplace interests have lushly funded the growth of law-and-economics in the nation's law schools. "Tens of millions of dollars have been invested in the law-and-economics movement, which has gained immense influence in leading law schools [in a]crusade against regulation." Karen M. Paget, *Lessons of Right-Wing Philanthropy*, AM. PROSPECT, Sept. 1998, at 91.

Marketplace pressures undercut the work of scientists whose research reveals social costs of products and industrial processes. The author was told by Sherwood Rowland, a Nobel Laureate in chemistry at the University of California, that from the time he announced his theory that chlorofluorocarbons were producing dangerous holes in the ozone layer, his invitations to speak at university chemistry departments around the country, generally industry-funded, and his grant-funded roster of graduate students, both dried up. Conversation with Sherwood Rowland, Gruter Institute, Squaw Valley, Cal., (June 19, 1993). Once Rowland was nominated for the Nobel Prize, his invitations and funding resumed. The author suspects this story is not unique.

The same market forces that make civic regulation necessary, constantly and assiduously attempt to resist and undercut that regulation. The "Syllogism of Marketplace Resistance" would go something like this:

> Reflecting human nature, the market forces that build the economy inherently tend to externalize their costs, which necessitates some form of externally-imposed regulation incorporating public values, which in turn these market forces continuously, powerfully, and comprehensively tend to resist, deflect, dilute, avoid, or repeal.

It is no surprise that the marketplace resists the imposition of public values upon private enterprises. For years in Corporate Law, we have taught that the duty of corporations is to maximize the profits of their shareholders, not to advance any altruistic broader public good. When governments attempt to impose non-market public values upon an industry (or upon private individuals), there is an understandable instinct to attempt to avoid or resist such imposition and the attendant costs. The tendency of each economic entity to resist cost internalization is multiplied by tens of thousands of corporations, coordinated in trade associations and industrial lobbies. It has resulted in governments' competition to attract industry by lowering pollution standards or minimizing enforcement, a process also known as the "race to the bottom."[36] Ultimately, this vast concurrent resistance permeates and impedes public efforts to instill civic values into the governance process.

How do marketplace actors react to regulations and guidelines applying public values that undercut private gain? They react in quite understandable human terms:

- seeking to comply, especially when regulations are mandatory and genuine enforcement is likely;

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36. Perceptions of such an inter-state "race of laxity" or "race to the bottom" prompted the dramatic series of federal pollution statutes in the 1970s in which Washington took on a dominant role in environmental regulation. Recently, however, a revisionist academic argument has arisen asserting that there never has been such a competition between states to attract industry by lowering environmental regulation and enforcement. Professor Richard Revesz argues that logical models are inconsistent with race-to-the-bottom claims and that competition among the states should produce an efficient allocation of industrial activity rather than a race-to-the-bottom. In contrast, Professor Kristin H. Engel responds to Revesz's argument by suggesting that there are a number of well-established economic models that predict a race-to-the-bottom. *See* Richard Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210, 1211–12 (1992). *But see* Kristin H. Engel, *State Environmental Standard-Setting: Is There a "Race" and Is It "To the Bottom"?*, 48 HASTINGS L.J. 271, 297–98 (1997); *see also* ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 309–17 (2d ed. 1998).

- seeking to avoid compliance, either on the facts by denying the existence or validity of the problem, or on the law by contesting the authority of agencies, courts, or private citizen plaintiffs, and aggressively litigating every step of the way;
- trying to undercut regulatory effectiveness by advocating cuts in appropriations, particularly appropriations for enforcement;[37]
- trying to modify or minimize regulatory implementation through lobbying and negotiation;
- trying to modify or repeal the restrictive requirements of statutes and regulations, arguing that "the pendulum has swung too far."

These strategies can run concurrently. In the first decade of environmental law, when enforcement structures were new and uncertain, resistance to enforcement was probably a prevalent mode, along with simultaneous limited gestures toward compliance. Subsequently, as environmental law enforcement has become surer and better known, many corporate enterprises have institutionalized compliance efforts through vigorous inspection, self-audits, and organizational redesign. The fact that industries generally have moved toward compliance, however, does not mean that they also have abandoned their avoidance strategies.

The odyssey of almost any environmental rule is marked by the marketplace placing significant pressures against or within the agency drafting the rule, with the goal of decreasing the burden on the regulated community. The central rationale of virtually all environmental statutes is a legislative recognition of a need to protect parts of the natural and civic-societal economies from the excesses of the marketplace economy. Statutes typically are launched in a climate of public concern about particular issues that induces legislatures to promulgate new statutory or regulatory systems. Over time, however, the real life practicalities of public administration mean that the agencies and their personnel are continually forced to operate under the pressure of the marketplace economy. Through the jungles of lobbying pressure, appropriations committees, media-managed public opinion, and industry "capture," most agencies find it impossible to maintain the public interest that originally launched their regulatory structure as the dominant element in the day-to-

37. In the first session of the 104th Congress, the first appropriations bill passed cut the enforcement budget for the EPA by $1.8 billion, thereby cutting nationwide multi-statutory enforcement by half. *See* H.R. 2099, 104th Cong. (1995) (passed by House of Representatives July 2, 1995, but blocked and substantially revised in the Senate). The bill also included more than a dozen precisely targeted riders exempting particular industries from regulation. *See* Plater *supra* note 34, at 754–56; ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY—1995-96 TEACHER'S MANUAL UPDATE 8–30 (1995).

day life of its implementation.[38] Sometimes the problem is that the legislature itself is captured by the marketplace, as happened during the 104th Congress. But even in less dramatic times, most bureaucrats will testify that the most sophisticated and insistent pressures they receive come from the efforts of marketplace players to diminish the burden of public limitations on public or private enterprises.

This is not to say that environmental law analysis requires a skepticism of the positions taken by industry in every controversy, but merely to note the full reality of considerations at play. A thoughtful consideration of three economies produces a deeper and more realistic sense of what is going on.

IV. The Three Economies Model Applied in Actual Cases

Here are some examples, beginning with some relatively simple cases, of how expanded consideration of the three different realms can clarify what is going on in environmental law.

A. Natural Resource Damage Evaluation Viewed through the Three Economies

Echoing the public trust doctrine, six federal statutes currently provide authority for forcing defendant industries and individuals to pay "natural resource damages" ("NRD") for the pollution and destruction of wildlife and natural systems.[39] In the late 1980s the U.S. Department of Interior issued rules for NRD assessment that were predominantly based upon the market value, if any, of the wildlife concerned. Thus if a polluter killed a million baby striped bass, the damages would be the market

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38. The Atomic Energy Commission ("AEC") became so much a part of the nuclear industry that a Congress concerned with protecting humans and the environment from radiological dangers felt obliged to split the agency. The AEC was divided into an avowedly promotional agency, the Energy Research and Development Administration ("ERDA"), and the Nuclear Regulatory Commission ("NRC") which was supposed to be focused on safety enforcement. *See* Cong. Q., Inc., Federal Regulatory Directory 7 (9th ed. 1994). ERDA was then disbanded in 1977. *Id.* Critics subsequently have argued that the old pressures have reappeared to make the NRC itself less militant. *See generally* Richard Goldsmith, *Regulatory Reform and the Revival of Nuclear Power*, 20 Hofstra L. Rev. 159 (1991).

39. Natural resource damages are authorized by the CWA, 33 U.S.C. § 1321(f)(4)(5) (1994); CERCLA, 42 U.S.C. § 9607(f) (1994); Oil Pollution Act, 33 U.S.C. § 2702(b)(2)(A) (1994); Trans-Alaska Pipeline Authorization Act, 43 U.S.C. § 1653 (1994); National Marine Sanctuaries Act, 16 U.S.C. § 1443 (1994); National Park System General Authority Act, *id.* § 19(jj)-(l) (1994 & Supp. II 1996). Such natural resource damages were previously assessable under the public trust doctrine and, to some extent, the tort of public nuisance. *See* Michael J. Bean & Melanie J. Rowland, The Evolution of National Wildlife Law (3d ed. 1997).

value of the dead fingerling fish at striped bass market rates. If market values could not be assigned, for example, to a population of lizard that had been destroyed, no damages would be assessed. After reviewing these rules, the D.C. Circuit declared that

> it is unreasonable to view market price as the exclusive factor, or even the predominant one .... Natural resources have values that are not fully captured by the market system.[40]

Subsequently, after the court struck down the guidelines, the agency was able to promulgate new rules that took fuller account of the values, cumulative impacts, and importance of the natural resources at issue, setting values based on cumulative losses to humans as well as to ecosystems beyond tangible market values.

The marketplace had induced the Department of Interior to do its natural resource accounting in market terms, but the court, interpreting the statutory mandate as a civic objective beyond the marketplace economy, was able to assert the separate legitimacy of non-market values. Today, theories of NRD overtly incorporate resource damage accountings, thereby drawing from each of the three different economies. While market values remain relevant, so are "contingent-valuation" measures based upon subjective, market-intangible human values, and elements attempting to incorporate the intrinsic natural "existence" values of wildlife and ecosystems.[41]

B. Spotted Owls and Old Growth Timber Clearcutting in Federal Ancient Forests—Lessons in Politics and Pluralism

Confrontations between the Endangered Species Act ("ESA") and clearcut timber operations in the remaining old growth sectors of national forests demonstrate some basic linkages among the three economies, and also the associated consequences when regulatory agencies are induced to operate primarily within only one economy.

Over the past decade the small, endangered, and much excoriated northern spotted owl has operated as a dramatic legal tripwire under the ESA, launching litigation and several injunctions restraining clearcutting in the Pacific Northwest.[42] The furor over the owl arises from its potential to block market operations in the small remaining stands of American old

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40. Ohio v. U.S. Dep't of Interior, 880 F.2d 432, 462–64 (D.C. Cir. 1989).

41. *See* 15 C.F.R. § 990 (1998). *See generally* Frank B. Coss, *Natural Resource Damage Valuation*, 42 VAND. L. REV. 269 (1989).

42. *See generally* Victor M. Sher, *Travels with Strix: The Spotted Owl's Journey Through the Federal Courts*, 14 PUB. LAND L. REV. 41 (1993).

growth forests.[43] The owl requires an ancient forest habitat, and may be rendered extinct if the forests are clearcut. Faced for the first time with substantial legal obstacles to cutting the last virgin national forest groves, the industry has exerted great political, legal, and media pressures on federal agencies and citizen enforcement mechanisms, spotlighting the seeming irrationality of protecting the owl.[44] The marketplace coalition formed to oppose the enforcement of the ESA against the timber industry was made up of forest products corporations and their national trade associations, and the U.S. Forest Service itself (and subsequently has spawned several broader major industry coalitions aiming to erode the ESA as it applies in other settings as well).[45]

The marketplace resistance confronting the spotted owl comes from the threats the owl poses to an extensive program of veiled federal subsidies, as well as straightforward constraints on the sale of lumber and woodchips. For generations, the Forest Service has sold timber from national forests below regular market price and it has built logging roads whose combined length is more than eight times that of the interstate

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43. The spotted owl issue is often portrayed in the media as a simple "jobs vs. owls" conflict, but the actual tradeoff is more subtle: the historical backdrop is the timber industry's broad-scale clearcutting of private lands and more than two-thirds of the marketable public forests, with concomitant inadequate reforestation. Privately owned old growth forests have been largely eliminated, replaced with monoculture (single species) tree farms that produce less total biomass and have not served to maintain the industry (as well as drastically reducing plant and wildlife ecosystem diversity). To maintain their revenues, timber companies have sought accelerated endgame clearcutting efforts on the remaining old growth public forests.

44. The efforts of marketplace players to log the remaining virgin forests in the National Forest System are illustrated in successful lobbying efforts to eliminate citizen enforcement and suspend forest protection laws. A rider to § 318 of the Interior Appropriations Act, for example, achieved statutory non-enforcement by removing jurisdiction for citizen challenges. *See, e.g.*, Dep't of the Interior and Related Agencies Appropriations Act of 1990 § 318(g), Pub. L. No. 101-21, 106 Stat. 749 (1989).

In the so-called "timber salvage" rider attached by timber lobbyists to the Oklahoma City Bombing relief bill, the Forest Service and timber industry were relieved from compliance with virtually all environmental laws that required planning or otherwise prevented accelerated clearcutting in designated national forests. *See* Emergency Supplemental Appropriations for Additional Disaster Assistance, for Anti-Terrorism Initiatives, for Assistance in the Recovery from the Tragedy that Occurred at Oklahoma City, and Rescissions Act, Pub. L. No. 104-19, 109 Stat. 194, 240 (1995). The rider mandated the Forest Service and U.S. Bureau of Land Management to award contracts for timber sales, even if the sales were below cost to the government. The rider prohibited courts from issuing preliminary injunctions with respect to any aspect of timber sales. *See generally Congress and President Enact The Most Anti-Environmental Law in History*, SAVE AMERICA'S FORESTS, Winter 1995-96; *see also* Or. Nat. Resources Council v. Jack Ward Thomas, No. 95-6272-HO, 1995 U.S. Dist. LEXIS 19567, at *5 (D. Or. Dec. 5, 1995).

45. The American Forest and Paper Association supports one of the two major lobbying coalitions targeting the ESA. *See* Am. Forest & Paper Ass'n, *Look Who Agrees There's a Better Way to Protect Me and My Friends* (visited Feb. 10, 1999) <http://www.afandpa.org/ESA/support.htm>. The other major marketplace coalition targeting the ESA is the National Endangered Species Act Reform Council. *See* Nat'l Endangered Species Act Reform Coalition (visited Feb. 10, 1999) <http://www.nesarc.org>.

highway system.[46] Additionally, the Service provides other free services to the industry,[47] pays twenty-five percent of gross timber receipts to local communities as payments in lieu of property taxes,[48] and helps the industry resist enforcement of environmental laws that constrain logging. Finally, the largest subsidy it facilitates, unaccounted in most economic analysis, is an ecological subsidy: the permanent sacrifice of thousands of acres of diverse natural forests, often on fragile, high-elevation slopes that otherwise would be available for multiple non-logging public uses.

Marketplace economics create clearcutting practices that impose substantial cumulative impacts on the economy of nature and the human civic-societal economy. The logging of old-growth forests leads to severe erosion, wildlife losses, water quality degradation, a tenfold drop in an ecosystem's diversity of species, and other serious long-term natural effects.[49] As these externalities flow into the economy of nature, they inherently impact social welfare beyond the realm of the marketplace's accounting. Fewer fragile alpine forests remain for recreational and aesthetic uses, accelerated erosive runoff from denuded slopes causes increased flooding, and downstream ecosystem effects are drastic. The recent severe losses to the billion-dollar commercial salmon fisheries of the Pacific Northwest (primarily attributed to clearcutting and federal dams) is a further example of this effect. For most of these harms the timber industry faces no liability in financial terms or otherwise.[50]

Thus, to understand the complex realities of the conflicts between clearcutting and the endangered spotted owl, one must know much more than the owl's own biology and the economics of selling wood products.

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46. *See* Joel Bourne, *At End of the Roads?*, AUDUBON MAG., July 1998, at 60. See *generally* Robert E. Wolf, *National Forest Timber Sales and the Legacy of Gifford Pinchot: Managing a Forest and Making it Pay*, 60 U. COLO. L. REV. 1037 (1989) (discussing the history of the Forest Service and timber sales).

47. In many cases timber is sold below the Government's own out-of-pocket cash flow costs. During the 1980s, the Forest Service sold 124 billion board feet at a loss of $3.5 billion. If interest is figured in, this is a loss of $6.3 billion. Other free services by the Forest Service besides providing logging roads include surveying and inventorying timberlands, fire protection, staff personnel and structures, mapmaking, and disease control. Under cost-accounting analysis, most of the 122 national forests have never earned a penny on timber; in 1990 only 15 showed a cash flow profit. *See* Perri Knize, *The Mismanagement of the National Forests*, ATLANTIC MONTHLY, Oct. 1991, at 98–101.

48. In 1996 this amounted to $327 million. *See* The Thoreau Institute, *National Forest Timber Sales and Receipts and Costs in 1996*, 14 DIFFERENT DRUMMER S-3 1998). The theory of these payments is that the federal government ought to contribute because it is exempt from state and local property taxation. The Forest Service does not account for these and many other public costs in calculating net revenues.

49. *See* Steve Young, *Tree Slaughter: Your Taxes at Work*, WASH. POST, Aug. 13, 1989, at B3; Tom Barlow, *Evolution of the National Forest Management Act*, 8 ENVTL. L. 539 (1978). The spotted owl turns out to be a vivid ecological indicator of ecosystem values, some of which have human consequences as well.

50. As an additional human consequence, the owl actually serves to strengthen available employment opportunities. The alternative mode to clearcutting is selective grading and cutting of forests, which can result in an increase of forest jobs. The issue is thus not "jobs vs. owls" but "owls for full employment."

The environmental laws invoked in this controversy understandably awakened an empassioned backlash from the marketplace.[51] Yet they also provided a forum for legal consideration of the complex ecology of the forest region, and of the marketplace's impact on societal values and its consequences for humans and natural systems. As so often happens in environmental cases, the protection of natural values (in this case saving a species from extinction) serves human utilitarian ends as well. The spotted owl is a living indicator of the old-growth ecosystem's unparalleled biodiversity, of the natural systems' declining health, and of the dysfunctional human consequences that flow from that decline. Endangered species operate as barometers of threatened values for humans in the civic-societal economy.[52]

The clash among three economies in the spotted owl cases also illustrates another frequent element of modern environmental practice—the cooptation of regulatory agencies into the marketplace economy. Agencies that are responsible for implementing the statutory mandates for protecting values within the natural and civic-societal economies often are taken over by the very forces they were intended to constrain. As discussed in Part III of this Article, the "capture" phenomenon chronicled by political scientists is a frequent reality in environmental agencies. Sadly the U.S. Forest Service is a classic example of this phenomenon.[53]

Distinguishing the three economies also emphasizes the important strategic role of citizens in environmental law enforcement, and the significant new pluralism in modern governance. Citizen enforcement has shaped the development of most of the major federal environmental regulatory structures.[54] The evolution of ESA enforcement was heavily

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51. The law school clinic that brought a number of these cases faced ethical and financial challenges catalyzed by the forest products industry. The University of Oregon faced appropriations and other political censures, and ultimately, while the academic portion of the clinic remains on campus, litigation is now conducted independently of the University. *See* Robert F. Kennedy, Jr. & Steven P. Solow, *Environmental Litigation as Clinical Education: A Case Study*, 8 J. ENVTL. L. & LITIG. 319, 321, 321 n.4 (1994).

52. *See generally* Zygmunt J.B. Plater, *The Embattled Social Utilities of the Endangered Species Act—A Noah Presumption and Caution Against Putting Gasmasks on the Canaries in the Coal Mine*, 27 ENVTL. L. 847 (1997).

53. *See* PLATER ET AL., *supra* note 6, at 397. Besides the Forest Service, frequent targets of the capture criticism are the U.S. Army Corps of Engineers, the National Marine Fisheries Service, the Soil Conservation Service, the Federal Highway Administration, the Nuclear Regulatory Commission, the Federal Energy Regulatory Commission, the Bureau of Land Management, the Bureau of Reclamation, and a number of regulatory offices within the U.S. Department of Agriculture.

54. Virtually all of the major pollution statutes, with the possible exception of toxics regulations, were shaped and pressed into active enforcement by the pressures of citizen litigation. An appellate history of the CAA, CWA, NEPA, Toxic Substances Control Act ("TSCA"), FIFRA, ESA and other major federal statutes reflects the strategic efforts of environmental citizen groups to force the government further to define, develop and implement the legislated statutory protections. Without the citizen enforcement provisions of the statutes or the efforts of the major environmental law citizens associations, most of these programs would probably have continued to languish under the political constraints

influenced by a series of citizen actions on the spotted owl and the snail darter.[55]

Citizen enforcement provides a necessary catalytic supplement to inertia and cooptation in the traditional "bi-polar" regulatory format of civic governance. In this model the marketplace is the dominant societal system, with government agencies and programs deployed by legislatures to administer corrections for market failure. The three economies model illustrates the shift to "multi-polar" pluralism in public law. Citizen environmental suits typically are motivated by desires to protect the natural world or civic values, and they attempt to force agency implementation to be guided by the objectives in the latter two economies for which the statutes were originally promulgated. Agencies created to serve the civic-societal and natural economies are regularly suborned by the marketplace economy; environmental citizen suits encourage agencies to serve all three. The functional necessities of modern governance reflected in environmental law are increasingly echoed in pluralizing trends in government processes in other fields both here and abroad. Such trends include heightened transparency, anticipatory factfinding and alternatives analysis (as in environmental impact statements), enhanced public accounting, multi-party decisional processes, and retrospective performance analyses.

C. The Delaney Clause Controversy: The Law and Economics of Three Economies

The construct of three economies does not produce simplified answers for difficult questions of societal balancing, but only clarifies that governmental answers must consider more than one economic realm.

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of the marketplace. Only in the case of the toxics statutes does agency initiative appear to have been self-motivating, perhaps because the field of toxics regulation is so charged with active political concern.

The major legal foundation for this pluralistic citizen enforcement phenomenon, besides enhanced participation in agency rulemaking, is the citizen standing provision found in many environmental statutes. Drawing on the experience of the civil rights era, the drafters of dozens of new and amended environmental statutes in the 1970s authorized suits by citizen attorneys general. In a quintessentially American move—now being copied by European and other international legal systems—these statutes give citizens standing to enforce federal law by filing a sixty-day notice letter. *See, e.g.*, TSCA, 15 U.S.C. § 2619 (1994); ESA, 16 U.S.C. § 1540(g) (1994); Surface Mining Control and Reclamation Act, 30 U.S.C. § 1270 (1994); Deep Seabed Hard Mineral Resources Act, 30 U.S.C. § 1427 (1994); CWA, 33 U.S.C. § 1365 (1994); Marine Protection, Research, and Sanctuaries Act, *id.* § 1415(g) (1994); Deepwater Port Act, *id.* § 1515 (1994); Noise Control Act, 42 U.S.C. § 4911 (1994); Energy Policy and Conservation Act, *id.* § 6305 (1994); RCRA, *id.* § 6972 (1994); CAA, *id.* § 7604 (1994); Powerplant and Industrial Fuel Use Act, *id.* 8435 (1994); Ocean Thermal Energy Conversion Act, *id.* § 9124 (1994); Outer Continental Shelf Lands Act, 43 U.S.C. § 1349(a) (1994). Fee-shifting provisions further encourage citizen enforcement by allowing citizen plaintiffs who have prevailed in whole or part to recover expert witnesses' and attorneys' fees.

55. *See generally* Sher, *supra* note 42; Plater, *supra* note 52.

The fascinating environmental law controversy over the Food, Drug, and Cosmetic Act ("FDCA")'s Delaney Clause was a milestone in national debates about risk assessment, law-and-economics, the virtues of a draconian statutory standard, and political questions about regulators' ability to stand up to regulated interests.

The Delaney Clause, Section 409 of the FDCA, added to the Act in 1958, prescribed that:

> No additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal.[56]

This legislation represented a fearful congressional response to initial revelations of the risks posed by human exposure to hazardous chemicals. The Delaney Clause's skepticism about the marketplace's ability to insure safety against chemical exposures presaged the message of Rachel Carson's *Silent Spring*, identifying potentially harmful and widespread effects of agricultural pesticides to the health of natural systems and humans.[57]

By the late 1980s, however, scientists were able to detect chemicals with increasing accuracy, and there was an explosion of new knowledge about hazardous compounds and the statistical probabilities of their harm thresholds. As a result, some observers began to view the Delaney Clause as a crude, blunt instrument left over from a more primitive era.

The marketplace economy understandably resisted restrictions on pesticides. Commercial pesticides are profitable products and very effective at killing insects that damage crops.[58] Under pressure from industries

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56. 21 U.S.C.A. § 348(c)(3) (1958).

57. *See* CARSON, *supra* note 13.

> This soil community, then, consists of a web of interwoven lives, each in some way related to the others—the living creatures depending on the soil, but the soil in turn a vital element of the earth only so long as this community within it flourishes .... What happens to these incredibly numerous and vitally necessary inhabitants of the soil when poisonous chemicals are carried down into their world ... borne on the rain that has picked up a lethal contamination as it filters through the leaf canopy of forest and orchard cropland? Is it reasonable to suppose that we can apply a broad-spectrum insecticide to kill the burrowing larval stages of a crop-destroying insect, for example, without also killing the "good" insects whose function may be the essential one of breaking down matter?

Id. at 56.

Building from the effects of pesticides on soil communities, Carson chronicled the cumulative risks to other parts of natural systems, and ultimately predicted threats extending to humans and human economics that have become all too real. *See id.; see also* COLBORN ET AL., *supra* note 11.

58. The statutory provision embodied the so-called Delaney Paradox: its restrictions applied to food "additives," and primarily impacted pesticide residues within processed

seeking to circumvent the Delaney Clause, pitched debates began in the corridors of Congress and in various agencies.

When industry, in this case the agricultural chemical industry, attacks a provision of public interest law, it casts its message in public-oriented terms such as diminished food quality, reduced availability of nutritious foods, increased food costs, and other risks to the public,[59] not in terms that "profits should override safety concerns." The marketplace's public-oriented arguments, however, are often solid and rational. A principal challenge of environmental law is to determine where the rational balance should be drawn in making societal decisions, weighing the public merits of all three economies.[60]

In the Delaney Clause debates, a powerful law-and-economics argument emerged, based on a rational cost-benefit-alternatives analysis of regulatory restrictions on carcinogenic pesticides. The marketplace interests correctly noted that application of the Delaney Clause produced many anomalous results in public interest terms. Since the Clause forbade *any* carcinogenic pesticide residue additives, it prohibited the use of safer, ever-so-slightly carcinogenic pesticides, while increasing the use of much more hazardous non-carcinogenic pesticides.[61] There were also

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foods, while in some cases raw foods containing the same pesticide residues were allowed to be sold for human consumption. In fact, the criterion of concentration level in processed foods may bear little or no relation to actual risk of cancer, and some pesticides could be barred by rigid enforcement of the Delaney Clause while others, with greater cancer-causing risk, could be permitted because they do not concentrate in processed foods. *See* COMM. ON SCIENTIFIC & REGULATORY ISSUES UNDERLYING PESTICIDE USE PATTERNS AND AGRICULTURAL INNOVATION, REGULATING PESTICIDES IN FOOD: THE DELANEY PARADOX 40–44 (1987).

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> The reduced number of effective pesticides will disrupt agricultural production, diminish food quality, increase food costs, and reduce the availability of nutritious fruit, vegetable, and grain products . . . . The risk to the public will be increased by forcing EPA to ban beneficial pesticides that pose *de minimis* cancer risks and requiring the substitution of pesticides posing greater health risks which are not associated with cancer . . . .

Clausen Ely, *The Delaney Clause: An Obscure EPA Policy Is to Blame*, EPA J., Jan. 1993, at 44–45 (writing as an attorney representing the National Food Processors Association).

60. That is, the arguments made by marketplace actors to reinforce their individual interests, which often have the power to dominate decisional processes, must nevertheless be evaluated in terms of their public, not private, merits, while giving full consideration to the merits of arguments supporting the other economies' interests which typically are far more difficult to marshall and bring to bear in the political process.

61. The EPA came to hold this view:

> EPA believes that [strict] interpretation of the Delaney Clause could adversely affect the nation's food supply by making it difficult for farmers to use the safest pesticides on their crops. [EPA's] policy of applying a "negligible risk" standard across the board to all potentially carcinogenic pesticides [would] produce a more "enlightened" scheme than does a literal interpretation of the Delaney clause [which] precludes any risk/benefit analysis where even the tiniest risk of cancer is involved . . . . Our goal must be to bring U.S. pesticide

substantial doubts whether chemicals that caused cancer when given in large doses to mice, rats, and other non-human forms of life accurately depicted risks of cancer to humans. Hence, through a careful overall risk-benefit analysis, some of the pesticides containing trace amounts of carcinogenic materials appeared to be far preferable to the alternatives that had to be used under a strict interpretation of the Delaney Clause. Essentially incorporating a careful law-and-economics risk-benefit analysis, the Environmental Protection Agency ("EPA") issued administrative rules in October 1988 announcing its new interpretation of the Delaney Clause: the EPA would permit some cancer-causing pesticide residues in processed foods so long as the particular substances posed only a "de minimis" risk of actually causing cancer.[62]

The Natural Resources Defense Council citizen law firm ("NRDC") filed suit, arguing that the statutory language required the strict exclusion of carcinogenic pesticides that cumulated in processed foods, leaving no room for administrative re-interpretation to evade the statutory command. The NRDC argued that:

> The reality of life is that we are exposed to a multiplicity of toxic substances .... For this reason, ultimately, the overall policy underlying the Delaney Clause—that we should avoid unnecessary and involuntary exposure to cancer-causing agents—remains as valid today as when enacted .... During the Reagan administration, in describing dietary risk, the former Director of EPA's Pesticide Program said, "Pesticides dwarf the other environmental risks the Agency deals with, [even] toxic waste dumps ...."[63]

In *Les v. Reilly* the Ninth Circuit agreed with the NRDC, holding that "the language of the Delaney clause, its history and purpose all reflect that Congress intended the EPA to prohibit all additives that are carcino-

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> regulation into conformity with current science and ensure that the nation's pesticide safety laws provide the best available protection to consumers .... The current framework is illogical in that it results in opposite outcomes for pesticides having similar risks, benefits, costs, and efficacy.

Victor J. Kimm, The Delaney Clause Dilemma, EPA J., Jan. 1993, at 39–41 (writing as the head of EPA's pesticide bureau); *see also* Richard A. Merrill, FDA's Implementation of the Delaney Clause: Repudiation of Congressional Choice or Reasoned Adaptation to Scientific Progress?, 5 YALE J. ON REG. 1, 87 (1988) (concluding that the Delaney clause was both unambiguous and unwise, "at once an explicit and imprudent expression of legislative will").

62. *See* Regulation of Pesticides in Food: Addressing the Delaney Paradox, 53 Fed. Reg. 41,104, 41,110 (1988).

63. *See* Al Meyerhoff, *Let's Reform a Failed Food Safety Regime*, EPA J., Jan. 1993, at 42–43 (writing as NRDC's lead attorney).

gens, regardless of the degree of risk involved."[64] The Ninth Circuit further held that,

> the EPA in effect asks us to approve what it deems to be a more enlightened system than that which Congress established .... Revising the existing statutory scheme, however, is neither our function nor the function of the EPA .... If there is to be a change, it is for Congress to direct.[65]

As the judges anticipated, *Les v. Reilly* sharpened the debate about the "absolutism" of the legislation's language and ultimately produced a congressional override of the Delaney Clause. In the Food Quality Protection Act of 1996, Congress chose to amend the provision, shifting to a "negligible risk" risk assessment approach.[66] In a heavily debated bargain, environmental groups like NRDC reluctantly agreed to give up the strict enforceability of the Delaney Clause insofar as pesticide residues were concerned, to be replaced with the agency-defined standard of "reasonable certainty that no harm will result from aggregate exposure."[67]

D. The Lessons of Three Economies Reflected in the Actual Cases

What does a consideration of the three economies reveal in these foregoing classic environmental law narratives?

Debates are typically cast in civic-societal terms. Although the pressure to change the law comes from profit-maximizing marketplace players, when the debate is brought into public view, it is resolutely centered within the civic-societal interest, especially human health, with only an indirect backdrop of market costs. The concerns posed by pesticides to the economy of nature did not figure into the Delaney debate, eclipsed by civic concerns of human health. The linkage between civic-societal interests and the economy of nature was perhaps not sufficiently perceptible. Similarly, in the case of the spotted owl, the industry couched its arguments in terms of jobs rather than its concerns for maximizing the bottom-line.

The multiple roles of law-and-economics. As revealed in the Delaney Clause story, law-and-economics has developed multiple person-

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64. 968 F.2d 985, 986 (9th Cir. 1992).

65. *Id.* at 990.

66. Pub. L. No. 104-170, 110 Stat. 1489, (codified at 7 U.S.C. §§ 136-136y (1994 & Supp. II 1996)).

67. "Aggregate exposure" was inclusively re-defined, to include monitoring of all forms of cumulative human exposure. The health of children was established as the baseline against which the "reasonable certainty of no harm" standard is to be applied. The Delaney clause remains in effect with regard to other food additives.

alities. On one hand, when law-and-economics serves as a means rather than an end, it has evident contributions to make to the formulation of particular public policies, and in crafting effective implementation mechanisms. Thus, while cost-benefit analysis is not a complete rubric for public policymaking, it is a valuable part of such decisions, especially if it incorporates "shadowpricing" and other economic valuation techniques beyond market pricing. Further, by enlisting marketplace techniques, regulators are often able to achieve desired levels of compliance at lower cost and greater efficiency.[68] If, on the other hand, law-and-economics succeeds in establishing the premise that the marketplace is the optimal determinant of societal policy, then the civic-societal economy and the economy of nature will be lost in that narrowed perspective.

The chronic role of uncertainty. In environmental law there is always the danger that important knowledge about indirect causations and attenuated consequences is lacking. The Precautionary Principle has become an internationally recognized environmental axiom because dislocations in the civic-societal economy and the economy of nature so often result from actions in the marketplace for which consequences are insufficiently known or considered.[69] As the NRDC argued,

> The essential premise of the Delaney Clause . . . is as simple as it is powerful: What we understand best about carcinogens is the limited extent of our knowledge. [The] clause is grounded in a policy of prevention: prohibiting the addition of carcinogens in the food supply to prevent avoidable cancers in humans . . . . Since the Delaney Clause became law, much new scientific knowledge has been developed. Yet we still do not know whether humans are more or less sensitive than experimental animals to various carcinogens. We don't know how to assess the contribution of one carcinogen in relation to the impacts of exposures to other carcinogens. We don't know the *cumulative* impact of dozens of carcinogens now permitted in the food supply. We should, therefore, follow Rachel Carson's advice . . . . "The ultimate answer is to use less toxic chemi-

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68. The term "market-enlisting" rather than "market-based" regulation seems preferable because it clarifies that operative goals are to be set by the governmental process rather than by market mechanisms themselves. The term "market-enlisting" encompasses the range of innovative new devices—bubbles, netting, offsets, banking, tradable emission permit allocations, and the like—that have developed to supplement the old command-and-control regulatory systems. PLATER ET AL., *supra* note 6, at 745–62.

69. *See, e.g., Principle 15, Rio Declaration on Environment and Development*, United Nations Conference on Environment and Development, U.N. Doc. A/Conf.151/5/Rev.1 (1992), 31 I.L.M. 874, 879. This logic has led to the proliferation around the world of the American concept of environmental impact statements, a societally oriented looking-before-we-leap that is counter-intuitive to private and public entrepreneurs. This concept also is in Principle 17 of the Rio Declaration. *See id.*

> cals, [rejecting] this system of deliberately poisoning our food and then policing the result."[70]

When Congress allowed some carcinogenic pesticide residues in food products, it took a calculated risk that perhaps could have been avoided.[71]

Environmental regulation is best when achieved through pluralism. As the spotted owl and the NRD regulation aptly demonstrate, the public interest in complex issues cannot be entrusted solely to the discretion of the marketplace. Like the logic of biodiversity in ecology, environmental law repeatedly shows that multi-polar processes involving citizen groups and other representatives of the latter two economies are more reliable than bi-polar governance. In cases beginning at least as early as the effort to save Storm King Mountain,[72] and continuing through modern cases like the spotted owl litigation, environmental law has relied on citizens' lawsuits and administrative challenges to pressure reluctant agencies to enforce the requirements of public interest statutes.

In these circumstances citizen participation in shaping and applying environmental laws continues to be critical. The NRDC and other citizen groups fearful of pesticide carcinogens in food were no doubt leery of a statutory amendment that left the definition of permissible residues up to the discretionary judgments of agencies, whose decisions by virtue of their discretionary character would be practically unassailable because of judicial deference in court reviews of agency action. If public protection can vary substantially with the changing discretionary agendas of sequential administrations, provisions protecting the public and natural welfare are distressingly vulnerable.[73]

The dilemma of clear but crude standards. Sometimes protections for the economy of nature and the civic-societal economy require stark public law commands rather than subtle discretionary balances. The dilemma posed by the Delaney Clause is that a stark statutory provision may start to look outdated in the minds of many fair-minded observers. In a number of cases its commands are over-inclusive, and under-sensitive to the rational public policy subtleties of the issue. Suppose that

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70. Meyerhoff, *supra* note 63, at 42–43.

71. *See* Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402 (1971) (discussing Secretary's statutory duty to consider feasible alternatives).

72. *See* Scenic Hudson Preservation Conference v. Fed. Power Comm'n, 354 F.2d 608 (2d Cir. 1965). This case, in which citizens blocked a major pumped-storage project that would have gutted the scenic Storm King Mountain in the Hudson River valley, gave birth to several environmental advocacy groups, and established the concept of private attorneys-general as an important strategy for American environmental protection.

73. Worries that the amendment's delegation of virtually unchallengeable agency discretion to determine a "reasonable certainty [of] no harm" would permit erosions of strict health standards were reinforced by subsequent FDA policy declarations by Clinton Administration officials that some of the amended Act's health-based requirements are discretionary rather than mandatory.

an environmental advocacy group knows that the agency in charge of enforcing a discretionary standard would be vulnerable to political pressure from the regulated industry. What is an environmental group to do then, especially in cases where many experts outside the industry affirm that a stark prohibition may be logically inconsistent and poor public policy? An intricate balancing process for setting standards for a wide array of substances cannot be done case-by-case in Congress. Such standard setting must be delegated to an administrative agency, and there the whole statutory mandate can be lost to the cupidity of the political marketplace within the agency process. This is a dilemma regularly faced by public interest groups.

On the other hand, clear statutory commands efficiently sidestep much of the slippage encountered by other restrictions on the marketplace economy, because they leave little wiggle room and subject both regulators and regulatees to a tougher level of judicial supervision. Crude, simple commands are more likely to be obeyed by regulatees and regulators alike. As in the Delaney Clause case, environmental law often presents a dilemma between optimal substantive theory and tactical realities, and its resolution requires acknowledgment that often both sides may be right. Given the imbalances between the contending economies, the interests of the civic-societal economy and the economy of nature may often require relatively blunt legal instruments that, despite their inefficiencies, are necessary to support significant citizen enforcement.[74]

The analytical construct of three economies is a useful tool in a wide variety of instances. The World Trade Organization and other international trade compacts, for example, have begun applying market-based standards in judging the acceptability of domestic food safety and environmental regulations. This trend can undercut governmental protections of the economy of nature and civic-societal interests.[75] The debate over the amendment of the ESA regularly forces groups interested in protecting species for natural and societal reasons to defend and justify themselves in market terms.[76] This is precisely what Justice Scalia required of coastal regulations in *Lucas v. South Carolina Coastal Council.*[77] The problem is similarly reflected in coastal fisheries regulations which are

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74. The Endangered Species Act's restrictions on federal agency actions, for instance, would probably have been unenforceable if they had been couched in terms of balancing instead of stark prohibitions. *See* 16 U.S.C. § 1536 (1998); Hill v. Tenn. Valley Auth., 437 U.S. 153 (1978).

75. *See, e.g.*, David A. Wirth, *International Trade Agreements: Vehicles for Regulatory Reform?*, 1997 U. CHI. LEGAL F. 331 (examining the impact of international trade agreements on domestic environmental regulations).

76. The aim of several proposed amendments to the ESA is to provide for market-based compromises of species protections. Habitat conservation plans can offer potentially beneficial accomodations, but also raise risks that market pressures will override ecological considerations in their initial negotiation and subsequent implementation. *See generally* Plater, *supra* note 52.

77. *See generally* Lucas, 505 U.S. 1003 (1992), *supra* note 16.

implemented in terms that give dominant weight to destructive market tendencies,[78] and in the systemic chemical contaminations which now persist widely in ecosystems and human metabolism.[79] The modern over-emphasis on marketplace factors dangerously ignores the warning signs provided by the other two economies.

V. SUMMARY: ENVIRONMENTAL LAW, POLITICS, AND ECONOMICS

When environmental law burst onto the scene around the time of the first Earth Day in 1970, many observers declared that it was just a fad. The new field, however, addressed significant realities and needs of society, and quickly has become an established sector of the legal system of great breadth and technical complexity.

The practice, theory, and syncretic linkages of environmental law have become so substantial that any curriculum that ignores the field is likely to be regarded as gravely lacking. In response, law schools have evolved a range of compromises for translating the complexity and volume of the field into the academic curriculum. Many conceptual challenges remain, however, in understanding and processing the vast sprawl of the field. Academics deploy a broad array of methodologies and ideologies to get a handle on environmental law and typically find, as the First Law of Ecology would have it, that everything is connected to everything else.

No matter what approach or ideology one applies to the field, it is realistic and helpful to conceptualize environmental law as an important field of societal governance existing in three different but interconnected "economies." Environmental law is not a mere ameliorative overlay on the marketplace economy. In the realm of the civic-societal economy, it has taken on the task of protecting and advancing under-served and long-

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78. In the territorial waters of the United States, the National Oceanic and Atmospheric Administration ("NOAA"), through regional fisheries councils, attempts to set maximum quotas in order to protect sustainable populations of commercial fish for future generations of fishermen and consumers. The pressure of industry upon NOAA and the agency's consequent laxity in enforcing conservation regulations, however, are notorious. Even though the depredations of over-fishing undercut the marketplace's own long-term interests, the short-term logic of the drive to maximize profits powerfully undercuts governmental regulations. In dealing with the New England ground fisheries, for example, the agency was systematically unable to prevent an obviously declining downward spiral of haddock, flounder, halibut, and similar ground fish until populations crashed. When the agency attempted to set a numerical quota for "total allowable catch" ("TAC"), the political backlash was so great that the agency redefined the TAC to be whatever the amount was that fisherman actually caught. Besides dropping quotas, the regulation also dropped limits on the number of fishing trips that boats could make, substituting instead minimum net size restrictions that traditionally are virtually impossible to enforce. *See* 1982 Groundfish Management Plan Amendments of New England Regional Fisheries Council, 47 Fed. Reg. 43,705 (1982).

79. *See generally* COLBORN ET AL., *supra* note 11.

term interests of human society. In the realm of the economy of nature, it calls attention to and preserves the mechanisms of the intricately structured natural systems that support life on the planet. Recognizing the overlapping yet distinct realms of the latter two economies forces awareness of realities which otherwise get eclipsed by and absorbed into the marketplace economy's dominance of modern governance.

Sustainable environmental law requires a straightforward acknowledgement of constant inherent tensions between public values and the dynamic structures of the marketplace economy. The marketplace economy is the most pervasive and powerful social and political mechanism in modern governance. It has the ability to achieve not only great material productivity but also efficient and beneficial accomodations with public values. Yet this powerful political and economic marketplace based on individualized interests consistently tends to resist the imposition and implementation of public values. The 104th Congress was only the most dramatic recent manifestation of this reality. A basic function of environmental law and of government must be to assure that the short- and long-term interests of society at large, and the natural systems of the planet in which human society will have to make its future, are substantially factored into the structures of societal governance.

Too often, as in the timber debates, public policymaking is pressured to adopt the relatively uncritical "pragmatic," short-sighted dictates of the marketplace. True economic analysis must incorporate a comprehensive review of total social impacts. The analysis cannot be merely the sum total of all the cost-externalizing private self-interests in the marketplace. Instead, it must include cumulative inputs and impacts to human civic existence, present and future. Because natural systems are of such importance to the civic-societal economy—in terms of resources supplied and perturbances passed on—a full economic accounting must also consider consequences to the economy of nature.

A perceptive awareness of pervasive politics of resistance and circumvention in the dominant marketplace economy is necessary to the understanding of environmental law controversies and to guide the crafting of balances and accomodations that do justice to the less powerful but ultimately more important civic-societal economy and the economy of nature. Environmental law can no longer be dismissed as the extension of a fad or generational idiosyncrasy. It is about the life and governance of society over time. Scratch the surface of almost any environmental law issue and one will find the fundamental issues of modern democracy.